

What Is Claimed Is:

Sub A17

1. A light source comprising a plurality of densely placed laser diode modules, each of said plurality of densely placed laser diode modules having an output of at least 100 mW.

2. A light source comprising:

at least one laser diode module including a metal substrate mounting a laser diode chip and an optical component, and a peltier device thermally connected with said metal substrate; and

a heat pipe having a heat absorbing portion and a heat radiating portion, said heat absorbing portion of said heat pipe being thermally connected with said peltier device.

3. The light source according to Claim 2, further comprising a plurality of laser diode modules each including a metal substrate mounting a laser diode chip and an optical component, and a peltier device thermally connected with said metal substrate.

4. The light source according to Claim 3, further comprising a plurality of heat pipes, each of said plurality of heat pipes being thermally connected with a respective one of said plurality of laser diode modules.

5. The light source according to Claim 4, further comprising a mounting portion having said plurality of laser diode modules mounted thereon, said mounting portion having holes configured to receive heat absorbing portions of said plurality of heat pipes along a lengthwise direction of said respective one of said plurality of laser diode modules, said respective one of said plurality of laser diode modules being thermally connected with a respective one of said plurality of heat pipes received in said holes.

6. The light source according to Claim 4, further comprising heat radiating fins provided on heat radiating portions of said plurality of heat pipes.

7. The light source according to Claim 2, wherein said heat pipe is cylindrical in shape.

8. The light source according to Claim 7, wherein said laser diode module has a bottom portion that includes a curved surface portion, and wherein said heat pipe is tightly connected to said curved surface portion.

9. The light source according to Claim 2, further comprising:
a mounting portion having said laser diode module mounted thereon; and
a plurality of heat radiating fins provided on a bottom surface of said mounting portion.

10. The light source according to Claim 2, wherein said light source is a light source for optical excitation used in an optical transmission system.

11. The light source according to Claim 2, wherein said light source is a light source for optical signal used in an optical transmission system.

Sub 127 12. A Raman amplifier comprising a light source including a plurality of densely placed laser diode modules, each of said plurality of densely placed laser diode modules having an output of at least 100 mW.

13. A Raman amplifier comprising a light source including:
at least one laser diode module including a metal substrate mounting a laser diode chip and an optical component, and a peltier device thermally connected with said metal substrate; and

a heat pipe having a heat absorbing portion and a heat radiating portion, said heat absorbing portion of said heat pipe being thermally connected with said peltier device.

14. A light source comprising:

a laser diode module including a laser diode chip, an optical component, and a peltier device, said laser diode chip and said optical component being supported by said peltier device;

a mounting portion having said peltier device mounted thereon such that said peltier device is thermally connected with said mounting portion; and

at least one heat pipe having a first portion extending within said mounting portion and a second portion extending from a side of said mounting portion, said heat pipe having an interior with a heat transfer fluid therein.

15. The light source according to Claim 14, wherein said mounting portion is made of a metal.

16. The light source according to Claim 14, further comprising a plurality of densely placed laser diode modules, each of said plurality of densely placed laser diode modules having an output of at least 100 mW.

17. The light source according to Claim 14, further comprising a plurality of laser diode modules each including a metal substrate mounting a laser diode chip and an optical component, and a peltier device thermally connected with said metal substrate.

18. The light source according to Claim 17, further comprising a plurality of heat pipes, each of said plurality of heat pipes being thermally connected with a respective one of said plurality of laser diode modules.

19. The light source according to Claim 18, wherein said mounting portion has holes configured to receive heat absorbing portions of said plurality of heat pipes along a lengthwise direction of said respective one of said plurality of laser diode modules, said respective one of said plurality of laser diode modules being thermally connected with a respective one of said plurality of heat pipes received in said holes.

20. The light source according to Claim 18, further comprising heat radiating fins provided on heat radiating portions of said plurality of heat pipes.

21. The light source according to Claim 14, wherein said heat pipe is cylindrical in shape.

22. The light source according to Claim 21, wherein said laser diode module has a bottom portion that includes a curved surface portion, and wherein said heat pipe is tightly connected to said curved surface portion.

23. The light source according to Claim 14, further comprising a plurality of heat radiating fins provided on a bottom surface of said mounting portion.

24. The light source according to Claim 14, wherein said light source is a light source for optical excitation used in an optical transmission system.

25. The light source according to Claim 14, wherein said light source is a light source for optical signal used in an optical transmission system.